Draft Statement of Work

The draft Statement of Work includes service to deliver products derived from a SAR satellite, responsive tasking, universal image processor, and derived products.

1. SERVICE TO DELIVER PRODUCTS DERIVED FROM a SAR SATELLITE – Acquire a service agreement to deliver products derived from the RADARSAT-1 and RADARSAT-2 downlinks to a Government-owned, highly transportable satellite tracking system.

   The RADARSAT commercial Synthetic Aperture Radar (SAR) satellites are required for CTAR because they support wide area surveillance with up to 500 km wide swaths capable of sweeping out large areas quickly and efficiently. In addition, RADARSAT-2 supports dual polarization beam modes offering enhanced feature discrimination and ship detection.

2. RESPONSIVE TASKING – Obtain responsive tasking access to RADARSAT-1 and RADARSAT-2 downlinks to a Government-owned, highly transportable satellite tracking system.

   RADARSAT satellites pass over any point on the earth at approximately the same local time every day, but operational considerations will dictate exactly when an image is to be taken and in what mode the imaging sensor should operate. Therefore, the tasking of the data collection from the RADARSAT satellites must be responsive to the needs of the dynamic maritime domain. NRL would like to task RADARSAT-1 and RADARSAT-2 using the following methods:

   a. For RADARSAT-1, the scenes are programmed based on a best-effort basis.
   b. For RADARSAT-2, initial planning will be completed at least 3 days prior to satellite tasking with satellite pass and imaging time identified; however the beam mode, position, and framing will be finalized no later than 24 hours prior to image time.

   The ship detections are most valuable about 30 minutes after ships have been detected and reviewed at the operational center. To achieve this timeliness, the RADARSAT SAR service provider must support direct down link to a government owned highly transportable satellite tracking system. The system will have the hardware and software able to derive products from the full imagery downloaded.

3. UNIVERSAL IMAGE PROCESSOR - Lease or purchase a universal image processor for converting the downlinked data from RADARSAT-1, RADARSAT-2, WORLDVIEW-1, and WORLDVIEW-2 into images used to detect ships in the open ocean.

   The image processor will be able to convert the raw satellite downlink into imagery formats that can be processed by ship detection software such as, but not limited to,

Ocean Suite and EVNI. The Image Processor will connect to a Cortex HDR, data sheet attached, to produce the images form the data receiver. The image processor will then be connected to local network via an Ethernet connection. The image processor will need to process 4 frames of imagery in 5 minutes. The image processor will push the full image to computers where the vessel detection algorithms will be used to create derived products.

4. DERIVED PRODUCTS - Explore the value in purchasing only the derived products from the RADARSAT imagery rather than purchasing the full imagery.

   The data collected from the RADARSAT-1 and RADARSAT-2 satellites will be of open water. Any ship in an SAR image will only occupy only a few pixels. Therefore most of the fuill image will be of water which contains no information. The CTAR project wishes to purchase only products derived from the full imagery from all modes of the RADARSAT satellites. These derived products can be, but are not limited to:

   a. Text file(s) with vessel detections on the open ocean in the message format known as OTH-Gold

   b. “Cropped” parts of the full image that contain the pixels of the ship detections. The CTAR project is interested in getting more information to explore the value in only purchasing derived products at the transportable tracking system.